Appendix D

Excavator Information, Caterpillar Model 345B and Model 385

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See separate pdf file (EDF-5153_appendix_D) for Appendix D.

345B L Series II

Hydraulic Excavator

Engine		
Engine Model	CAT® 3176C ATAAC	
Flywheel Power	239 kW	321 hp
Weights		
Operating Weight	44 460 kg	97,940 lb

345B L Series II Hydraulic Excavator

The 345B L Series II hydraulic excavator's high performance and rugged durability combine to maximize your productivity.

Operator Station

Roomy, quiet, automatic climate controlled cab has excellent sightlines to the work area to help keep operator fatigue low and production up throughout the entire shift. **pg. 4**

Serviceability

Fast, easy service with advanced filtration, filter access and electronic diagnostics for increased productivity. **pg. 5**

Electronic Control System

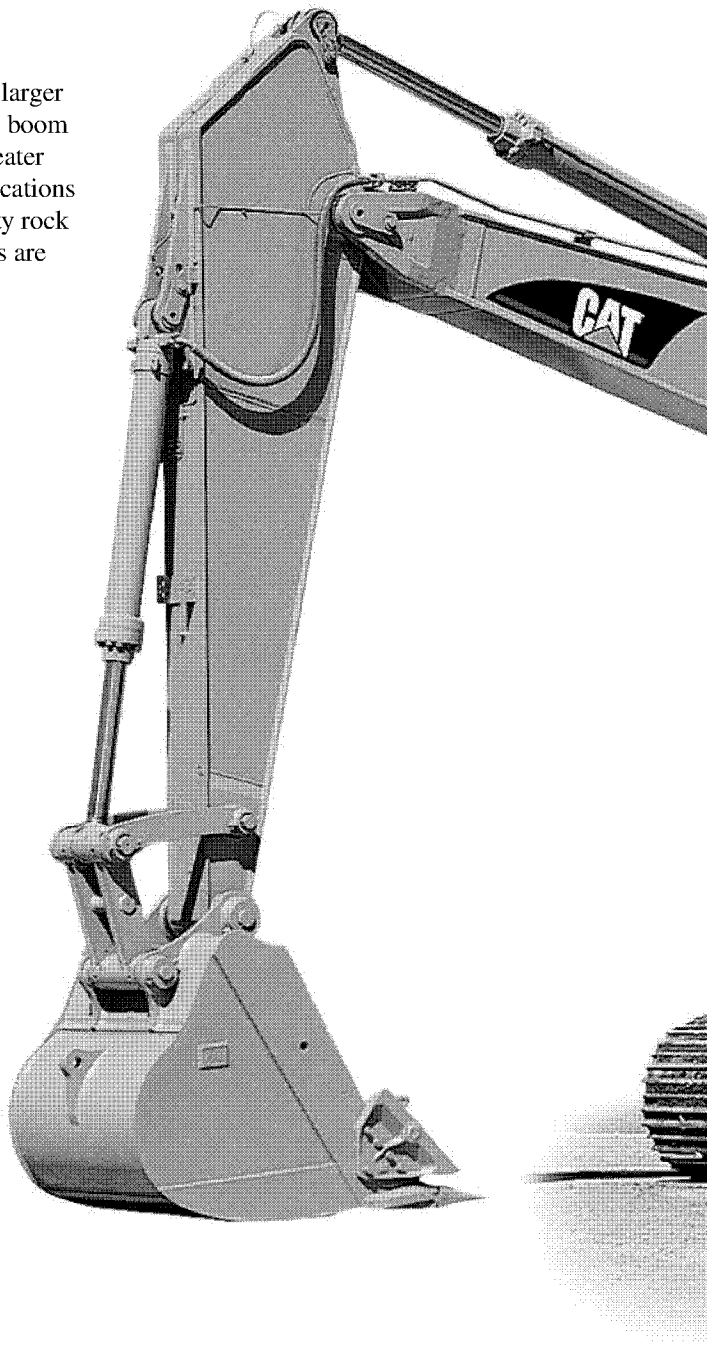
The Electronic Control System and Advanced Diesel Engine Management (ADEM II) maximizes fuel efficiency and performance by maintaining the optimum balance between engine speed an hydraulic demand. **pg. 6**

Undercarriage

Cat designed excavator undercarriage is stable, durable and low maintenance. Available in long-fixed gauge, long-variable gauge, and long-wide variable gauge configurations to suit various applications. **pg. 10**

Booms, Sticks & Attachments

Three booms and four sticks are available. The reach boom has a larger digging envelope while the mass boom allows larger bucket use with greater digging forces. The special applications boom is reinforced for heavy duty rock application. All booms and sticks are stress relieved. **pg. 11**



Outstanding performance. Excellent control, high stick and bucket forces, impressive lift capacity, simplified service and a more comfortable operator station increase your productivity and lower your operating costs.

Hydraulics

High pressure Caterpillar® hydraulics increase break-out and crowd forces to maximize bucket loads and lift capability while decreasing cycle times. **pg. 7**

Engine

The 345B L Series II is powered by the Cat 3176C ATAAC engine which complies with worldwide emissions requirements and future EPA Tier 2 requirements. This engine includes several design features which enhance performance, efficiency and reliability. **pg. 8**

Structures

Caterpillar design and manufacturing techniques assure outstanding durability and service life from these important components. **pg. 9**

Buckets

A wide variety of bucket types, aggressive bucket designs, and larger capacity bucket options take advantage of the 345B L's powerful digging forces for improved productivity. **pg. 12**

Complete Customer Service

Your Cat Dealer offers a wide range of services that can be set up under a customer support agreement when you purchase your equipment. To help you get the best return on your investment, the dealer will help you choose a plan that can cover everything from machine and attachment selection to replacement. **pg. 14**

Operator Station

The operator station is designed for comfort and ease of operation.

Operator Comfort. The operator work station is quiet with ergonomic control placement and convenient adjustments. Low lever and pedal effort, ergonomic seat design, and highly efficient ventilation create a cab environment that puts the operator firmly and comfortably in control which can translate into greater productivity.

Viewing. There is excellent viewing area through large, wide windows. A large push-open skylight provides upward visibility. The upper front windshield features a pillar mounted wiper to provide an unobstructed front viewing area. The lower window provides a view to the tracks and the ground next to the machine. The rear window offers a good view behind and to the left, aided by a lower engine hood profile.

Convenience. Each of the controls is positioned within easy reach of the operator.

Cab Shell. The double wall, pressed cab shell is mounted to the swing frame using butyl rubber mounts for reduced sound and vibration.

Electronic Control Systems. The Caterpillar Electronic Control System panel includes fuel level, hydraulic oil and engine coolant temperature gauges, machine condition indicators and operator controls in a single console for ease of use.

Automatic Climate Control. Automatic climate control maintains constant temperature in the cab on air conditioned machines. The operator can switch to standard air conditioning system with fresh or recirculated air.

Joysticks. Joysticks control front linkage and swing functions with minimal effort. The integrated joystick consoles adjust to operator preference and are suspended as part of the seat arrangement. Height can be adjusted independently of the seat.

Hydraulic Activation Control Lever. Hydraulic activation control lever deactivates hydraulic functions and helps prevent operation when the operator exits the cab.

Travel Controls. Hand or foot actuated travel controls allow the operator to move the excavator while working the front-end. Hand levers are easily removable.

Serviceability

Simplified service and maintenance features save time and money.

Service Points. Easy access service points for the fuel-water separator, engine oil filter, battery, radiator fluid level, window washer fluid and pilot system filter.

Filters. Efficient filters and convenient filter locations make maintenance easier.

- Two hydraulic capsule filters are mounted outside the hydraulic tank. New design reduces spills and contamination during replacement. Indicator in cab signals when the filter needs to be replaced, extending filter service life.
- Radial seal air cleaner has double layered filter core for better filtration. No tools are required to change filter. Operator is alerted to clogs.
- The engine oil filter is located in the pump compartment for easy access. To help reduce spills during oil changes, filter opening faces up.
- Pilot hydraulic system filter keeps contaminants away from the pilot system. This system includes a Scheduled Oil Sampling port to simplify sampling.
- A swing and travel motor case drain keeps contaminants from returning to the tank.

Design and Layout Advancements. Design and layout advancements translate to ease of service.

- Front linkage pin puller holes promote easy disassembly of front linkage.
- Cotter pin retained track master pin simplifies disassembly and assembly.
- Steep roller frame design reduces dirt buildup for easier cleaning.

Environmental Features. Environmentally sound features help protect the environment.

- Optional hydraulic tank shutoff valve reduces hydraulic spills during repair service.
- The hydraulic system is adaptable to biodegradable oil to reduce environmental impact.

Water Separator. Water separator removes water from fuel even when under pressure and is located in the radiator compartment for easy access.

Electronic Control System

Manages the engine and hydraulics for maximum performance.

Electronic Power Unit Control System. Electronic Power Unit Control System controls state-of-the-art hydraulics and engine performance for maximized productivity, increased fuel efficiency, lower emission and sound levels.

Automatic Engine Speed Control. Automatic Engine Speed Control reduces engine speed during light-load or no-load applications. The button on the right control lever engages low idle function, reducing engine speed. Press again to return to previous setting.

Electronic Engine Underspeed Control. Electronic Engine Underspeed Control balances engine and hydraulic output for maximum performance and fuel efficiency.

- It adjusts hydraulic pump output to maintain engine rpm in optimum range.
- 100 percent of available engine power is available for the hydraulic system.

Operator Control Panel. Operator control panel allows optimal performance in all applications, and has a high-contrast, back-lit, liquid crystal display.

Power Mode Selector. The Power Mode Selector changes hydraulic power and speed at the touch of a button.

- Economy Mode sets hydraulic power and is used during normal and utility operations to reduce fuel consumption and sound levels.
- The Power Up Mode sets hydraulic power for high production truck loading, trenching, and high-speed travel.

Machine Monitoring System. Machine monitoring system uses a progression of indicators, action lamps and alarms to inform the operator of machine conditions.

Service Mode. Service Mode of the Electronic Power Unit Control delivers fast, detailed diagnosis of machine conditions, improving uptime.

Hydraulics

Caterpillar hydraulics deliver power and control to keep material moving at high volume.

Control Responsiveness. Dramatic control responsiveness aids operation and improves cycle time.

- Control movements are matched to hydraulic action for improved operator performance.
- Swing dampening restrains drift and improves positioning for finishing and lifting applications for reduced operator fatigue.

Hydraulic Relief Pressure. Full-time high hydraulic relief pressure provides excellent boom, stick, and bucket forces for better productivity, higher lift capacity and a wider range of workable material.

Hydraulic Cross-Sensing System. Hydraulic cross-sensing system improves productivity with fast implement speeds and quick, strong pivot turns.

- Engine horsepower is deliverable as hydraulic power.
- Full power to a single motor is for strong, fast turns. Balanced power to two pumps is for straight travel.

Boom Regeneration Circuit. Boom regeneration circuit diverts oil within the boom cylinder circuit to lower the boom. This allows pumps to have most pressure and flow available for other circuits.

Stick Regeneration Circuit. Stick regeneration circuit also diverts oil within the stick cylinder circuit to allow fast stick in speed during multiple function operation.

Pump Flow. Pump flow decreases when controls are in neutral for reduced fuel consumption and sound.

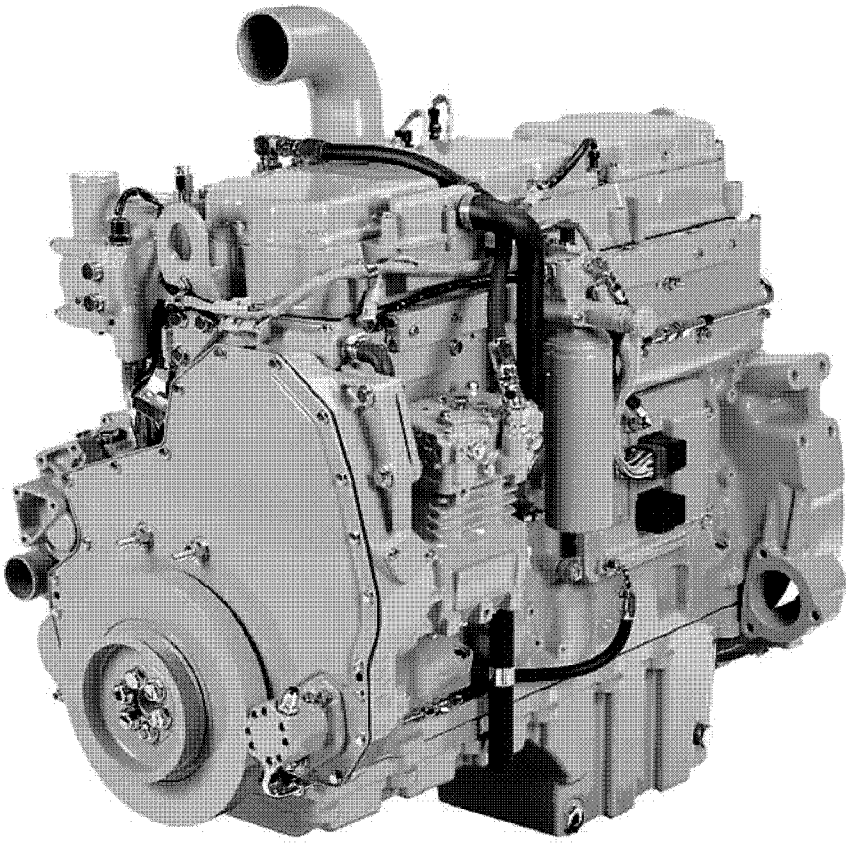
Auxiliary Hydraulic Valve. The auxiliary hydraulic valve is standard on the 345B L Series II for use with optional hydraulic circuits.

Hydraulic Flow Control System. The auxiliary hydraulic flow control system option provides up to four programmable flow presets to precisely match hydraulic tool requirements (i.e. hammers, shears, processors, brush cutters, etc.).

Hydraulic Cylinder Snubbers. Hydraulic cylinder snubbers at rod-end of boom cylinders and both ends of stick cylinders cushion shocks, reduce sound and increase cylinder life.

Engine

Built for power, reliability, economy and low emissions.



Performance. Cat 3176C ATAAC engine continues its tradition of powerful, efficient performance, unmatched reliability and durability.

- 345B L Series II meets EPA Tier 2 requirements.

Fuel System. Advanced Diesel Engine Module (ADEM II) fuel system controls the engine for optimal fuel injection, increased fuel efficiency, longer component life.

Efficiency. The engine is turbocharged and aftercooled to increase engine power by burning fuel with greater efficiency.

Piston Design. Two-piece piston design provides excellent strength with the steel crown and aluminum skirt for reduced weight.

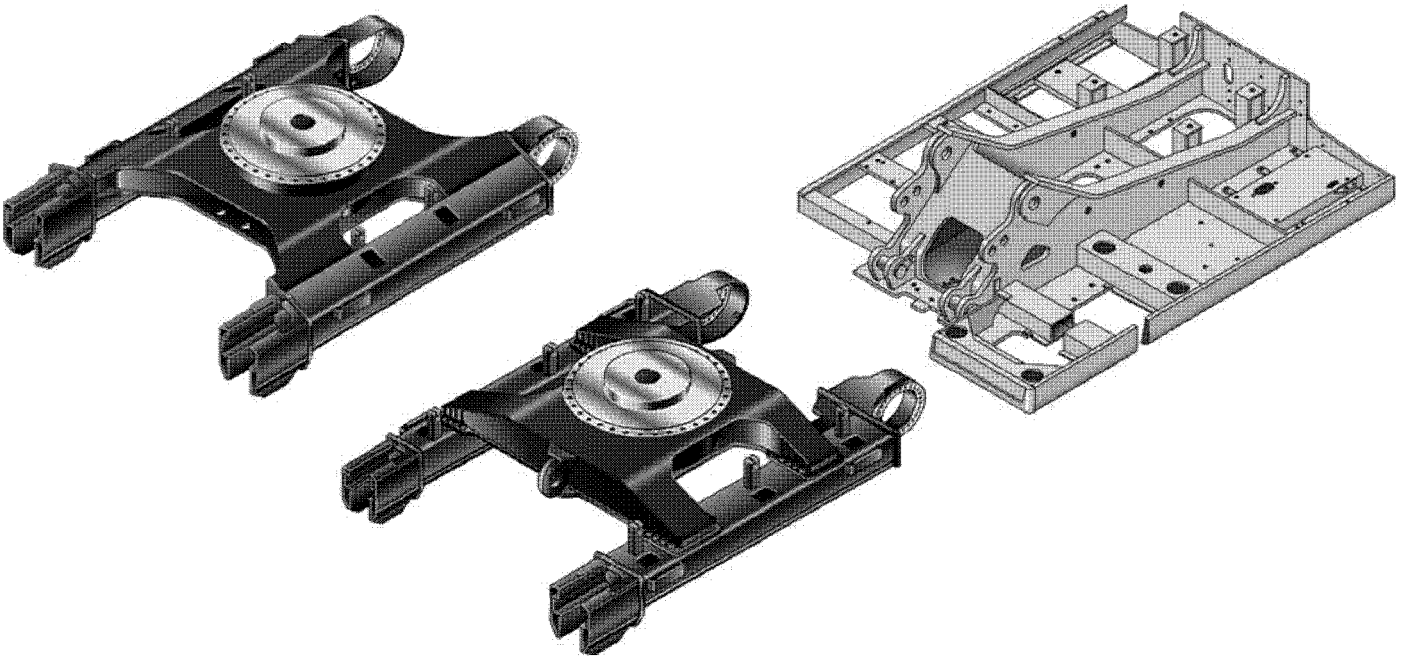
Sampling Valve. Engine oil S•O•S[SM] sampling valve is provided on the engine oil filter head.

Automatic Engine Speed Control. The engine has Automatic Engine Speed Control with convenient one-touch command. Three-stage control maximizes fuel efficiency and reduces sound levels.

- When placed in the "OFF" mode, if a no-load condition or light-load condition continues more than three seconds, the automatic engine control reduces engine speed by a maximum of 100 rpm.
- When placed in the "ON" mode, if a no-load condition or light-load condition continues more than three seconds, the automatic engine control reduces engine speed from high idle to 1300 rpm.
- At any time, the operator can activate a switch on the top of the right control lever to reduce the engine speed to 1000 rpm. This feature, referred to as one-touch idle, can be used both to conserve fuel and to reduce engine sound levels. Activate switch again to return to previous level.

Structures

The 345B L Series II structural components are the backbone of the machine's durability.



Design. Advanced carbody design for fixed gauge undercarriage stands up in the toughest applications.

- Modified X-shaped, box-section carbody provides excellent resistance to torsional bending.
- Upper structure weight and stresses are distributed evenly across the full length of the track roller frame.
- Smooth transitions and long welds reduce stresses at the carbody-to-roller frame junctions for excellent durability.
- Robot welding ensures consistent, high-quality welds throughout the manufacturing process.
- Steep track roller frames are easier to clean.

Variable and Wide Variable Gauge Undercarriage's. Variable Gauge (VG) and Wide Variable Gauge (W VG) undercarriage's have track roller frames which are bolted to the carbody and can be retracted for shipping.

Roller Frames. Robot-welded track roller frames are press-formed, pentagonal units to deliver exceptional strength and service life.

Main Frame. Rugged main frame is designed for maximum durability and efficient use of materials.

- Robot welding was used for consistent, high-quality welds.
- The outer frame utilizes curved side rails, which are die-formed, for excellent uniformity and strength throughout the length.
- Box section channels improve upper frame rigidity under the cab.
- Boom tower and one piece main rails are constructed of solid, high tensile strength steel plates.
- New boom foot design transfers load more efficiently with less stress in critical areas.
- Sheet metal supporting structure is strengthened by integrating the mounting into the upper frame structure.
- Reinforced lift cylinder and swing drive mounts increase structure durability in rock and quarry applications.

Undercarriage

Durable undercarriage absorbs stresses and provides excellent stability.

Robotic Welding. Precision robotic welding ensures a quality weld every time. These welds increase rigidity, reduce internal stresses and enhance durability for the chassis and track roller frames.

Chassis Design. Heavy-duty, X-shaped chassis design of Cat undercarriage components are purposely oversized to offer heavy-duty performance and durability.

Strutted Track Links. Strutted track links are sealed for long life. Track rollers, carrier rollers and idlers are also sealed and lubricated for excellent service.

Efficiencies. Steep Track roller frame design and elimination of a ledge at the carbody and roller frame juncture, reduce material build-up and make digging out easier.

Idler Guards. Standard idler guards and center track guides maintain track alignment. Optional sprocket guiding guards or full length track guiding guards are available for additional protection on steep side slopes.

Travel Motors. Smooth autoshifting two-speed travel motors offer top travel speeds and plenty of pull on slopes or turns.

Long Fixed Gauge. Long fixed gauge undercarriage maximizes stability and lifting capacity. Long, wide and sturdy undercarriage offers a stable work platform.

Long Variable Gauge. Long variable gauge undercarriage provides ease of transport and a stable platform when working on a variety of sites. The wider stance of the variable gauge improves stability over the side for increased lifting. The increased stability also allows for larger buckets that can result in higher production.

Long Wide Variable Gauge. Long wide variable gauge (W VG) undercarriage further increases over-side stability and lift capacity.